



SIGMA-ALDRICH

## Material Safety Data Sheet

Date Printed: 12/13/2008  
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Version 1.210

### Section 1 - Product and Company Information

**Product Name** HYDROCHLORIC ACID 32% (AS <0.000005%)  
**Product Number** 84420  
**Brand** Fluka Chemical

**Company** Sigma-Aldrich  
**Address** 3050 Spruce Street  
**City, State, Zip, Country** SAINT LOUIS, MO 63103 US  
**Technical Phone:** 800-325-5832  
**Fax:** 800-325-5052

**Emergency Phone:** 314-776-6555

### Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313	EC no	Annex I Index Number
HYDROCHLORIC ACID >=25%	7647-01-0	No	231-595-7	017-002-01-X
Ingredient Name	CAS #	Percent	SARA 313	
HYDROCHLORIC ACID	7647-01-0	> 25.000 %		
WATER	7732-18-5	<= 75.000 %	No	

**Formula** HCl  
**Synonyms** Acide chlorhydrique (French), Acido cloridrico (Italian), Anhydrous hydrochloric acid, Chloorwaterstof (Dutch), Chlorohydric acid, Chlorowodor (Polish), Chlorwasserstoff (German), Hydrochloride, Hydrogen chloride (ACGIH:OSHA), Muriatic acid, Spirits of sal

### Section 3 - Hazards Identification

#### Emergency Overview

Toxic.  
Toxic by inhalation. Causes burns. Irritating to respiratory system.

**HMS Rating**  
Health: 3 Flammability: 0 Reactivity: 1

**NFPA Rating**  
Health: 3 Flammability: 0 Reactivity: 1

For additional information on toxicity, please refer to Section 11.

### Section 4 - First Aid Measures

#### Oral Exposure

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

#### Inhalation Exposure

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

#### Dermal Exposure

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

#### Eye Exposure

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

### Section 5 - Fire Fighting Measures

**Autoignition Temp:** N/A

#### Firefighting

##### Protective Equipment

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

##### Specific Hazard(s)

Emits toxic fumes under fire conditions.

##### Specific Method(s) of Fire Fighting

For small (incipient) fire extinguishing, use a portable fire extinguisher rated for flammable liquid fires. For large fires, fixed fire suppression systems, such as a sprinkler system, should be capable of extinguishing a flammable liquid fire.

### Section 6 - Accidental Release Measures

#### Procedure to be Followed in Case of Leak or Spill

Evacuate area.

#### Procedure(s) of Personal Precaution(s)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### Methods for Cleaning Up

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

### Section 7 - Handling and Storage

#### Handling

##### User Exposure

Do not breathe vapor. Do not get in eyes, on skin, on clothing.

#### Storage

##### Suitable

Keep tightly closed.

#### Special Requirements

May develop pressure. Open carefully.

### Section 8 - Exposure Controls / PPE

#### Engineering Controls

Safety shower and eye bath. Use only in a chemical fume hood.

#### Personal Protective Equipment

##### Respiratory

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a fullface respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a fullface supplied air respirator.

##### Hand

Compatible chemical-resistant gloves.

##### Eye

Chemical safety goggles.

**Other**  
Faceshield (8-inch minimum).

**General Hygiene Measures**  
Wash thoroughly after handling. Discard contaminated shoes. Wash contaminated clothing before reuse.

**Exposure Limits**

Country	Type	Value
Poland	NDS	5 MG/M3
Poland	NDSCh	10
Poland	NDSP	-

**Exposure Limits, RTECS**

Country	Source	Type	Value
USA	ACGIH	Ceiling concentration	2 PPM
USA	MSHA Standard	Ceiling concentration	5 PPM (7 MG/M3)
USA	OSHA	PEL	CL 5 PPM (7 MG/M3)
New Zealand	OEL		
USA	NIOSH	Ceiling concentration	5 PPM

**Remarks** check ACGIH TLV

**Section 9 - Physical/Chemical Properties**

<b>Appearance</b>		
<b>Physical State</b>	<b>Color</b>	<b>Odor</b>
Liquid	Faintly yellow	Pungent
<b>Molecular Weight</b>	36.46 AMU	
<b>pH</b>	N/A	
<b>BP/BP Range</b>	110 °C	
<b>MP/MP Range</b>	-114.2 °C	
<b>Freezing Point</b>	-24.4 °C	
<b>Vapor Pressure</b>	166.991 mmHg	21.1 °C
<b>Vapor Density</b>	1.3 g/l	
<b>Saturated Vapor Conc.</b>	N/A	
<b>SG/Density</b>	1.2 g/cm3	
<b>Bulk Density</b>	N/A	
<b>Odor Threshold</b>	N/A	
<b>Volatile%</b>	N/A	
<b>VOC Content</b>	N/A	
<b>Water Content</b>	N/A	
<b>Solvent Content</b>	N/A	
<b>Evaporation Rate</b>	N/A	
<b>Viscosity</b>	N/A	
<b>Partition Coefficient</b>	N/A	
<b>Decomposition Temp.</b>	N/A	
<b>Flash Point °F</b>	N/A	
<b>Flash Point °C</b>	N/A	
<b>Explosion Limits</b>	N/A	
<b>Flammability</b>	N/A	
<b>Autoignition Temp</b>	N/A	

**Solubility** N/A

N/A = not available

**Section 10 - Stability and Reactivity**

**Stability**

**Stable**  
Stable.

**Materials to Avoid**

Bases, Amines, Alkali metals, Metals, Potassium permanganate, Fluorine, concentrated sulfuric acid, Hexalithium disilicide, Metal acetylides or carbides.

**Hazardous Decomposition Products**

**Hazardous Decomposition Products**  
Hydrogen chloride gas.

**Hazardous Polymerization**

**Hazardous Polymerization**  
Will not occur.

**Section 11 - Toxicological Information**

**Route of Exposure**

**Skin Contact**

Causes burns.

**Skin Absorption**

May be harmful if absorbed through the skin.

**Eye Contact**

Causes burns.

**Inhalation**

Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May be harmful if inhaled.

**Ingestion**

May be harmful if swallowed.

**Signs and Symptoms of Exposure**

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

**RTECS Number:** MW4025000

**Toxicity Data**

Oral - Man: 2.857 mg/kg (LDLO)

Remarks: Vascular: BP lowering not characterized in autonomic section.  
Lungs, Thorax, or Respiration: Respiratory depression.  
Gastrointestinal: Changes in structure or function of esophagus.

Oral - Woman: 420 UL/KG (LDLO)

Remarks: Behavioral: Excitement.  
Cardiac: Pulse rate.  
Kidney, Ureter, Bladder: Hematuria.

Inhalation - Human: 1,300 ppm (LCLO)

Inhalation - Human: 3,000 ppm (LCLO)

Inhalation - Rat: 3,124 ppm (LC50)

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste): Olfaction: Other changes.  
Sense Organs and Special Senses (Nose, Eye, Ear, and Taste): Eye: Irritis.

Inhalation - Mouse: 1,108 ppm (LC50)

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste): Eye: Other.  
Lungs, Thorax, or Respiration: Respiratory stimulation.  
Skin and Appendages: Skin: After systemic exposure: Dermatitis, other

Intraperitoneal - Mouse: 40142 UG/KG (LD50)

Oral - Rabbit: 900 mg/kg (LD50)

#### Irritation Data

Eyes - Rabbit: 5 mg 30S  
Remarks: Rinsed

#### Chronic Exposure - Carcinogen

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

#### IARC Carcinogen List

##### Rating

Group 3

#### Chronic Exposure - Teratogen

<u>Species</u>	<u>Dose</u>	<u>Route of Application</u>	<u>Exposure Time</u>
Rat	450 MG/M3/1H	Inhalation	(1D PRE)

Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).  
Specific Developmental Abnormalities: Homeostasis

#### Chronic Exposure - Mutagen

<u>Species</u>	<u>Dose</u>	<u>Cell Type</u>	<u>Mutation test</u>
Hamster	30 MMOL/L	lung	Cytogenetic analysis
Hamster	8 MMOL/L	ovary	Cytogenetic analysis

### Section 12 - Ecological Information

No data available.

### Section 13 - Disposal Considerations

#### Appropriate Method of Disposal of Substance or Preparation

Contact a licensed professional waste disposal service to dispose of this material.  
Observe all federal, state, and local environmental regulations.

### Section 14 - Transport Information

#### DOT

**Proper Shipping Name:** Hydrochloric acid  
**UN#:** 1789  
**Class:** 8  
**Packing Group:** Packing Group II  
**Hazard Label:** Corrosive  
**PIH:** Not PIH

#### IATA

**Proper Shipping Name:** Hydrochloric acid  
**IATA UN Number:** 1789  
**Hazard Class:** 8  
**Packing Group:** II

### Section 15 - Regulatory Information

#### EU Directives Classification

**Symbol of Danger:** C

#### Indication of Danger

Corrosive.

**Risk Statements** R: 34 37

Causes burns. Irritating to respiratory system.

**Safety Statements** S: 26 36/37/39 45

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

#### US Classification and Label Text

#### Indication of Danger

Toxic.

#### Risk Statements

Toxic by inhalation. Causes burns. Irritating to respiratory system.

#### Safety Statements

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

#### United States Regulatory Information

**SARA Listed:** No

**TSCA Inventory Item:** Yes

#### Canada Regulatory Information

#### WHMIS Classification

This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

**DSL:** Yes

**NDSL:** No

### Section 16 - Other Information

#### Disclaimer

For R&D use only. Not for drug, household or other uses.

#### Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. SigmaAldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2003 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.